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## **The order effect in self–other predictions: Considering target as a moderator**

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### *Abstract*

*Two factors known to affect the use of self in social prediction, target similarity and order of predictions, are considered in concert to understand how the use of self varies across the prediction of different targets. Replicating earlier studies, we predicted and found that people use the self more when predicting similar others than when predicting dissimilar others. Extending existing studies, we predicted and found order effects for similar others. As predicted no order effects emerged for predictions for dissimilar targets. Because the self is more accessible during the prediction of similar others, it matters whether self-predictions precede or follow other-predictions. Feature-matching theory is proposed as a possible explanation for the emergence of order effects in predictions of similar targets. Copyright © 2007 John Wiley & Sons, Ltd.*

When predicting others, people rely on the self. The use of the self in social predictions has different labels in the literature, including false consensus (Ross, Greene, & House, 1977), egocentric bias (Epley, Keysar, Van Boven, & Gilovich, 2004), and projection (e.g., Ames, 2004; Hoch, 1987; Wilhelm & Meinrad, 2004). Notwithstanding different labels, most researchers agree that people rely on the self when making predictions about others and that the self represents a habitual reference point (e.g., Dunning & Hayes, 1996; Srull & Gaelick, 1983). Commonly the use of the self is operationalized as the amount of correspondence between self-predictions and other-predictions with higher correspondence indicating increased use of the self. Most researchers recognize that the degree to which the self is used in social prediction varies across different factors among which two factors figure prominently: the *target* of the prediction and the *order* of the prediction. Other influencing factors have been mentioned in the literature (e.g., motivational factors, Marks, Graham, & Hansen, 1992) but will not be addressed here.

Robbins and Krueger (2005) conducted a meta-analysis on the influence of group membership of the target on the amount of self–other correspondence. They found a strong and robust effect of group

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membership on self–other correspondence. When predictor and target belong to the same group self–other correspondence is higher than when predictor and target belong to different groups.

Ames (2004) investigated the mechanisms underlying these differences and showed that perceived similarity mediates between use of the self and use of stereotype knowledge when predicting others. He manipulated perceived similarity between participants and a target person as being high or low. Participants read information about the target, which was a member of a certain group, acting ambiguously. They were first asked to imagine their own thoughts and motives in the described situation, second to predict the motives of a stereotypical person of the group the target belonged to, and third to predict the motives of the target. When perceived similarity was high, the correspondence between the predictions of participants' own thoughts and motives was highest. When perceived similarity was low, however, the correspondence between predictions of the target's thoughts and motives and the stereotypical persons' thoughts and motives was highest. This indicates that high perceived similarity leads to increased use of the self in social predictions and low perceived similarity leads to increased use of stereotypical information. Thus, when predicting targets perceived as similar to the self, as compared to predicting targets perceived as dissimilar to the self, people should rely more on the self and hence show a greater correspondence between self- and other-predictions.

### **THE ORDER EFFECT IN SOCIAL PREDICTION**

Research recognizes that the order in which social predictions are made influences the amount of correspondence between self- and other-predictions. Mostly the effects are small but consistent (for reviews see Mullen et al., 1985; Robbins & Krueger, 2005). In a review on the false consensus effect, Mullen et al. (1985) found that when people are asked to first estimate the percentage of people holding a certain viewpoint before reporting their own viewpoint, self–other correspondence is larger than when people are first asked about their own view before making the estimation for other people. Similarly, Robbins and Krueger (2005) found a small effect of order of prediction in their meta-analysis. Self–other correspondence tended to be stronger when self-predictions followed other-predictions than when self-predictions preceded other-predictions. Although the order effect has been recognized, the existing literature fails to offer explanations for why it occurs.

We propose that the self plays a central role in the emergence of the order effect. To fully understand the order effect in social prediction, it is necessary to consider the target of the prediction, because the extent to which the self is accessible in other-predictions varies across different types of targets. Specifically, the more the other-prediction is based on the self—as is the case for similar targets—the more it should matter whether the self-prediction precedes or follows the other-prediction. Because the self should be more accessible in predictions for similar others than in predictions for dissimilar others, considering the target of the prediction is essential to understanding the order effect in social predictions. In the following we will discuss findings from other fields that explain order effects in terms of differences in accessibility of the self. Then we explain how these findings could be applied to the order effect in social prediction.

### **SIMILARITY OF TARGET AND ACCESSIBILITY OF THE SELF IN SOCIAL PREDICTIONS**

Order effects are commonly found in social comparison research (e.g., Hodges, 2005; Hodges, Bruininks, & Ivy, 2002; Mussweiler, 2001; Srull & Gaelick, 1983) and research on interpersonal

distance (Codol, Jarymowicz, Kaminska-Feldman, & Szuster-Zbrojewicz, 1989). Similarity between self and others is judged to be lower when people are asked ‘How similar are you to Person X?’ than when they are asked ‘How similar is Person X to you?’, and people tend to consider others closer to themselves than they consider themselves to others. One explanation for these order effects is offered by feature-matching theory (Tversky, 1977). In this theory, judgments of similarity are conceptualized as feature-matching processes. Imagine that a person is asked to judge how similar the self is to another person. According to feature-matching theory, such a judgment will be based on a comparison of the features of the self to the features of the other person. Specifically, the theory predicts that similarity will be rated as low when the person identifies features of the self that are not shared by the other person. Why should this be the case?

The self is the more familiar entity, and self-knowledge is more elaborate than knowledge about others (cf. Catrambone, Beike, & Niedenthal, 1996). When the self is compared to others (i.e., ‘How similar are you to Person X?’), many features of the self become accessible, because many features are known. These features are compared to the accessible features of the other. Because the other is less known, many accessible features cannot be matched. This leads to judgments of low similarity between the self and the other. Conversely, when the other is compared to the self (i.e., ‘How similar is Person X to you?’), features that are known about the other become accessible first. These features are then compared to the accessible features of the self. Because many features of the self are known and accessible, many features can be matched. This leads to judgments of high similarity between the self and the other.

Applying feature-matching reasoning to the use of self in social prediction offers an exciting possibility to explain order effects for social predictions for similar others. Indeed, it gives rise to a set of counterintuitive hypotheses. Specifically, when self-predictions are made first, many features of the self should become accessible. These features are compared to the accessible features for the subsequent prediction of the other. Because the other is less known, many accessible features cannot be matched, which should lead to low self–other correspondence. Put differently, increased accessibility of the self should lead to lower self–other correspondence. When other-predictions are made first, features that are known about the other become accessible first. These features are then compared to the accessible features of the self. Because many features of the self are known and accessible, many features can be matched, which should lead to high self–other correspondence. Because the self is used less in social predictions for dissimilar others, these predictions should not be susceptible to feature-matching effects.

One indication that order effects in the prediction of similar others are due to feature-matching processes may be observed in differences in the variance of self- and other-predictions. According to feature-matching theory, the familiar entity has more unique features than the unfamiliar entity. Applied to our context, when predicting the self, more features should be accessible during self-predictions than during other-predictions. To illustrate, when thinking of the self, people can easily come up with examples of both situations when they were serious and situations when they were carefree. When thinking of another person, however, people’s perceptions are more polarized such that they come up with situations in which the other is either serious or carefree (cf. Sande, Goethals, & Radloff, 1988). More importantly, the accessibility of features of the self should be moderated by order effects during social predictions of similar others. Specifically, when self-predictions precede other-predictions, self-predictions should show greater variance than other-predictions, reflecting greater accessibility of features of the self. However, when self-predictions follow other-predictions, self-predictions should show a comparable variance to other-predictions, reflecting that features of the other are matched to features of the self. This pattern should be reflected in the standard deviations of the self- and other-predictions across order of prediction.

Applying feature-matching reasoning to the use of the self in social predictions offers a theoretical explanation for the small but consistent order effect in social predictions that has not been examined in

previous research (Mullen et al., 1985; Robbins & Krueger, 2005). The present study is the first to simultaneously investigate target and order effects in social prediction. It thereby allows us to investigate the mechanisms underlying the order effect in predictions about others.

## OVERVIEW OF THE CURRENT STUDIES

Our theoretical reasoning leads us to advance the following hypotheses: When people predict similar others, people rely more strongly on the self than when predicting dissimilar others. Thus, our first hypothesis is that correspondence between self-predictions and other-predictions should be higher for similar than for dissimilar targets.

Because the self plays a role in self-predictions, whether these self-predictions precede or follow other-predictions should influence accessibility of the self. When self-predictions precede other-predictions, many features of the self become accessible which, during the other-predictions, counter to intuition then, should reduce the self–other correspondence. When other-predictions precede self-predictions, few features of the other should be accessible, which during self-predictions should increase the self–other correspondence. This leads us to advance our second hypothesis. For similar targets, the correspondence between self-predictions and other-predictions should be lower when self-predictions precede other-predictions than when self-predictions follow other-predictions.

When people predict the feelings of a dissimilar other, predictions are mainly based on stereotype information and the self is less accessible (Ames, 2004). Because other-predictions are therefore—at least partly—independent of self-predictions, whether these self-predictions precede or follow other-predictions should have little or no influence on the predictions for a dissimilar other. Hence, our third hypothesis is that for dissimilar targets the correspondence between self-predictions and other-predictions should be low and unaffected by the order in which predictions are made.

To test these hypotheses, we conducted three studies. In all studies participants made predictions about their own and another person's feelings toward a variety of emotional scenarios. The order in which participants made the prediction was manipulated. Study 1 examined whether order effects appear when people predict a similar other. Additionally, it explored our predictions that the variance of self- and other-predictions varies across order of prediction. Study 2 added a dissimilar target to the design to investigate whether increased accessibility of the self occurs for the prediction of similar others as compared to the prediction of dissimilar others. Further, it tested the hypothesis that order effects are moderated by the similarity of the target of predictions. Study 3 included a moderately similar target to further specify the boundary conditions of the use of the self in social predictions. Furthermore, it explored the strategies people use to predict different targets.

## STUDY 1

The first study tested the prediction that order effects appear when people predict a target that is similar to the self. Participants predicted their own feelings and the feelings of an average student to scenarios describing everyday hassles. We hypothesized that participants would use the self to predict the feelings of the similar other. According to the feature-matching logic, correspondence between self-predictions and other-predictions should be lower when self-predictions precede than when they follow other-predictions. Additionally, self-predictions should show greater variability when they precede other-predictions than when they follow other-predictions.

## Method

### *Participants*

A total of 77 students (28 male, 49 female) of the Vrije Universiteit Amsterdam participated in this study. Their age ranged from 16 to 30 years with an average of 19.8 ( $SD = 2.48$ ) years. They received 2.5 euros for their participation.

### *Design*

This study used a 2 (*object of prediction*: self vs. other)  $\times$  2 (*order of prediction*: self–other vs. other–self) mixed factorial design with object of prediction as a within-subject factor and order of prediction as a between-subject factor.

### *Procedure and Materials*

Participants completed the study individually on computers and were randomly assigned to one of two conditions. Participants in the *self–other condition* started by making predictions for themselves. They were asked to read 31 scenarios describing everyday hassles and annoyances and imagine that they were in the described situation (e.g., you see your train leaving the second you arrive at the platform; you get in a quarrel with your best friend). For each scenario participants rated on a 9-point scale (1 = *not at all*; 9 = *very much*) how bad they would feel if the situation were to happen to them. As a filler task, participants completed personality measures for an unrelated study. Then participants were told that the scenarios they had seen in the first part would be shown again and that they were now asked to imagine how bad the average student would feel (1 = *not at all*; 9 = *very much*). Subsequently, they described in an open-answer format what they thought the experiment was about.<sup>1</sup> Finally, they were debriefed and paid. Participants in the *other–self condition* followed the same procedure but predicted the average student before making the predictions for themselves.

## Results

In none of the three studies gender effects on the dependent measures were found and therefore are not further reported.

### *Measures*

To examine whether the order effects appear when people predict a similar other we calculated the correlation between self-predictions and other-predictions across scenarios (Klohn & Mendelsohn, 1998). We computed the correlations between self- and other-predictions for every participant, which were then transformed to Fisher  $Z$  scores.<sup>2</sup>

<sup>1</sup>Because in none of the three studies any participant guessed correctly what the purpose of the experiment was, the results of this question are not further discussed.

<sup>2</sup>This technique is also applied in the two other studies reported in this paper.

### Main Analysis

We predicted that in the other–self condition the self–other correspondence should be higher than in the self–other condition. This is exactly what we found. The average transformed correlation between the self–prediction and the other–prediction in the other–self condition was  $M_r = 0.75$  ( $SD = 0.43$ ) and the average transformed correlation in the self–other condition was  $M_r = 0.56$  ( $SD = 0.31$ ),  $F(1, 75) = 4.71$ ,  $p = .033$ ,  $\eta^2 = .06$ . Thus, when predicting the feelings of the average student *before* predicting one's own feelings the self–other correspondence was higher than when predicting the average student *after* predicting one's own feelings.

### Variance of Predictions

To examine whether participants answer more diversely when making self-predictions than when making predictions for the average student, we computed the difference score between the standard deviations of self-predictions and the standard deviations of other-predictions. We established a difference score by subtracting the standard deviations of the other-predictions from the standard deviations of the self-predictions. A more positive score indicates that self-predictions vary more than other-predictions. We predicted that the difference score should be greater and more positive for participants whose self-predictions precede their other-predictions than for participants whose self-predictions followed their other-predictions. An ANOVA with the difference score as the dependent variable and the order of prediction as between-subject factor confirmed our hypothesis,  $F(1, 76) = 9.25$ ,  $p = .003$ ,  $\eta^2 = .11$ . Difference scores were greater and more positive when participants' self-predictions preceded their other-predictions ( $M = 0.37$ ,  $SD = 0.42$ ) than when participants' other-predictions preceded their self-predictions ( $M = 0.10$ ,  $SD = 0.37$ ).

### Target Perception

To get an impression of what the imagined average student looked like, participants reported his or her age. The average age of the student target participants had in mind was 20.39 years old ( $SD = 2.18$ ). The correlation between participants' own age and the age of the imagined average student was high  $r = .70$ ,  $p < .001$ , providing support for the assumed similarity between the predictors and the imagined target.

### Discussion

The results of Study 1 support the hypothesis that order effects appear when people make predictions about their own feelings and the feelings of a similar other. Self–other correspondence was lower in the self–other condition than in the other–self condition. These findings are consistent with a feature-matching account in social prediction suggesting that the accessibility of features of the self varies across order of prediction during the prediction of similar others. The feature-matching explanation of our findings is further corroborated by the pattern of standard variations found. The standard deviation of self-predictions varied across order of prediction with greater variations for self-predictions when self-predictions preceded other-predictions than when self-predictions followed other-predictions.

Thus, when predicting a similar other, features of the self become accessible, and depending on whether the self-prediction precedes or follows the other-prediction this increased accessibility of the



self leads to moderate compared to high rates of self–other correspondence. The question remains, however, how people predict the feelings of someone who is perceived as dissimilar. Study 2 was designed to investigate this question.

## STUDY 2

To test our prediction that the use of the self in social predictions varies across similarity of the target to the self, we added a second target category in Study 2. We expected that people rely more on the self when predicting a similar other than when predicting a dissimilar other (Ames, 2004). When predicting dissimilar others, no order effect should emerge. As dissimilar target we chose an average older person. Because participants in our studies were students with an average age of 20 years, the average older person should be perceived as being dissimilar to themselves. There should be almost no self–other correspondence for dissimilar others, because the self is not likely to be compared to out-group members (Clement & Krueger, 2002; Robbins & Krueger, 2005). People should make use of other sources of information instead, such as stereotype knowledge (cf. Ames, 2004). Because self-predictions and predictions of the older person should involve, at least in part, independent processes and strategies for prediction, we expected no order effects on self–other correspondence for the prediction of older persons.

In short, for predictions of the feelings of a similar other, in our case an average student, we expected to replicate the results of Study 1. Extending Study 1, we expected that as compared to the dissimilar target condition, we should find greater self–other correspondence in the similar target condition than in the dissimilar target condition. Further, order effects for self–other correspondence should emerge in the similar target condition but not in the dissimilar target condition. Finally, we expected the standard deviations to vary as a function of target of prediction and order of predictions according to feature-matching theory. In the average student condition we expected to find the same effects as in Study 1, namely that standard deviations are greater and more positive for the self and that this effect is enhanced when self-predictions precede other-predictions. In the average older person condition we expected to find that standard deviations for the self are larger than those of the average older person, but we expected to find no differences for different orders because the two predictions are largely independent and therefore not prone to feature-matching effects.

## Method

### *Participants*

A total of 150 students (113 female, 37 male) of the Vrije Universiteit Amsterdam participated in this study. Their age ranged from 17 to 30 years with an average of 19.9 ( $SD = 2.37$ ) years. They received 3.5 euros for their participation.

### *Design*

This study used a 2 (*object of prediction*: self vs. other)  $\times$  2 (*order of prediction*: self–other vs. other–self)  $\times$  2 (*target*: average student vs. average older person) mixed factorial design with object of prediction as a within-subject factor and order of prediction and target as between-subject factors.



### Materials and Procedure

Of the 31 scenarios used in Study 1, we selected 15 scenarios. This selection was necessary because some of the scenarios were likely to happen to students but not older people (e.g., 'You get the results of an exam and you discover you have an E'). Only scenarios that were equally likely to happen to the average student as well as the average older person were selected. Besides that, the procedure the participants followed was the same as in Study 1.

### Results

Replicating Study 1, we found a main effect of *order of prediction*. The average transformed correlation between self-predictions and other-predictions in the other-self condition was higher ( $M_r = 0.55$ ,  $SD = 0.41$ ) than the average transformed correlations in the self-other condition ( $M_r = 0.36$ ,  $SD = 0.36$ ),  $F(1, 145) = 11.97$ ,  $p = .001$ ,  $\eta^2 = .08$ .

Replicating the findings of Ames (2004) and Robbins and Krueger (2005), we found a strong main effect for the *target of prediction*. As expected, the correspondence between self- and other-predictions was greater for the average student ( $M_r = 0.61$ ,  $SD = 0.40$ ) than for the average older person ( $M_r = 0.28$ ,  $SD = 0.28$ ),  $F(1, 145) = 35.30$ ,  $p < .001$ ,  $\eta^2 = .20$ . These findings indicate that, the more similar the target of the prediction is to the predictor, the greater is the correspondence between the prediction of one's own feelings and the feelings of the other.

Most importantly, these main effects were moderated by the predicted interaction between *order of prediction* and *target of prediction* on the correlation between self- and other-predictions,  $F(1, 145) = 5.84$ ,  $p = .017$ ,  $\eta^2 = .04$ . Simple effects analyses confirmed that the effect of order of prediction was significant in the average student condition  $F(1, 77) = 16.07$ ,  $p < .001$ ,  $\eta^2 = .17$ , but not in the average older person condition  $F(1, 68) = 0.61$ ,  $p = .437$ ,  $\eta^2 = .01$ . The untransformed correlations are given in Table 1.

### Variance of Predictions

Paralleling Study 1, we computed difference scores by subtracting the standard deviations of the other-predictions from the standard deviations of the self-predictions. These differences scores were used as dependent variables in an ANOVA with order of prediction and target of prediction as between-subject factors. According to the feature-matching logic, self-predictions should vary more than other-predictions when the other is a similar target and when the order of prediction is self-other. We found a main effect of target,  $F(1, 149) = 10.37$ ,  $p = .002$ ,  $\eta^2 = .07$ , indicating that the difference between the standard deviations of self-predictions and other-predictions was greater and more positive

Table 1. Amount of correspondence between self- and target-predictions for different orders and targets of prediction

Order of prediction	Target of prediction	
	Average student	Average older person
Self-Other	.45	.25
Other-Self	.78	.31

for similar targets ( $M = 0.21$ ,  $SD = 0.41$ ) than for dissimilar targets ( $M = -0.05$ ,  $SD = 0.56$ ). In this study, we did not find a main effect of order of predictions,  $F(1, 149) < 1$ . Nor did we find the predicted interaction effect between target of prediction and order of prediction,  $F(1, 149) < 1$ .

## Discussion

These findings suggest that people rely less on the self when predicting the feelings of a dissimilar other than when predicting a similar other. In line with our findings in Study 1, Study 2 confirms that, when predicting the feelings of a similar other, order effects for self–other correspondence emerge. When self-predictions follow predictions for a similar target self–other correspondence is higher than when self-predictions precede predictions for a similar other. This pattern of results again corroborates a feature-matching account (cf. Srull & Gaelick, 1983). When predicting a dissimilar target, no order effects for self–other correspondence occurred. This finding is compatible with the suggestion that the self is used less in predictions of dissimilar others.

Predictions about the self varied more than predictions about another person. This is consistent with the suggestion of a more elaborate self-knowledge than other-knowledge (Catrambone et al., 1996; Sande et al., 1988). Unexpectedly, however, this effect was only present for a similar other. One possible explanation for this could be that the sources of knowledge that these other-predictions are based on (e.g., stereotypes and social category knowledge) may comprise of many unique features, leading to a high variance in predictions. More importantly, we did not find the predicted interaction between order of prediction and target of prediction. We expected that only for a similar other self-predictions would vary more if the self-predictions precede the other-predictions than if self-predictions follow other-predictions. This was not the case but we also expected that for dissimilar others the order would not further influence the amount of variation in the self-predictions and this was indeed what happened. So this hypothesis was only partly confirmed.

Taken together, our findings suggest that people use different strategies when predicting the feelings of similar and dissimilar others. When predicting a similar target people use the self more than when predicting a dissimilar target. When predicting a similar target, the order in which the predictions are made influences the amount of correspondence in a way that is consistent with feature-matching theory.

## STUDY 3

To examine the boundary conditions of perceived similarity on the extent to which the self is used in social predictions, we added a moderately similar target to the similar and the dissimilar target. We chose an average Dutch person as additional target, because we expected this target to be perceived as moderately similar to the self given the breadth of the target category. Consequently, we expected self–other correspondence to be highest for the similar target (i.e., average student), moderate for the moderately similar target (i.e., average Dutch person), and lowest for the dissimilar target (i.e., older person). As in Studies 1 and 2, we expected order effects for predictions of the highly similar and moderately similar targets (the average student and the average Dutch person). These predictions should increase the accessibility of the self and should, in line with feature-matching theory, lead to order effects for the self–other correspondence for these targets. No order effects for self–other correspondence for predictions of dissimilar targets (the average older person) should occur.

Additionally, we explored whether people rely more on the self when making predictions for similar others than when making predictions of dissimilar others. To this end, we asked participants to report

how they made their predictions. Although people are not always aware of the factors influencing their responses (Nisbett & Wilson, 1977), it is nevertheless an informative and used method (e.g., Dunning & Hayes, 1996) to gain first insight in cognitive processes. We predicted that people would report more often to rely on the self for the predictions of similar others than for dissimilar others.

As in the previous studies, we also examined the standard variation of self- and other-predictions as an indication that the accessibility of features of the self varies as a function of the order in which predictions are made.

## Method

### *Participants*

A total of 152 students (88 female and 64 male) of the Vrije Universiteit Amsterdam participated in this study. Their age ranged from 18 to 42 years with an average of 21.52 ( $SD = 3.82$ ) years. They received 2.5 euro for their participation.

### *Design*

This study used a: 2 (*object of prediction*: self vs. other)  $\times$  2 (*order of prediction*: self–other vs. other–self)  $\times$  3 (*target*: average student vs. average older person vs. average Dutch person) mixed factorial design with object of prediction as a within-subject factor and order of prediction and target as between-subject factors.

### *Materials and Procedure*

The same 15 scenarios as in Study 2 were used. In the self–other condition, participants rated, for each scenario, how bad they would feel if it happened to them, before predicting how bad the other would feel (i.e., depending on the condition the target was the average student, the average older person, or the average Dutch person). This order was reversed for participants in the other–self condition. In between the two presentations of the scenarios, participants completed personality scales for an unrelated study for about 5 minutes. Then participants were asked with an open-ended question format which strategies they had used when making their predictions for the other person. Finally, participants rated how similar the target was to themselves (1 = *not at all similar*, 7 = *very similar*) and indicated the age of the imagined target.

## Results

### *Manipulation Check*

To verify that similarity varied across targets, we first examined the reported ages for the three different target categories. Reported ages differed significantly for the three conditions,  $F(2, 141) = 508.07$ ,  $p < .001$ ,  $\eta^2 = .88$ . Consistent with our expectations, participants differentiated between the three targets. Contrast analysis revealed that the average student ( $M = 20.24$  years,  $SD = 3.07$ ) was perceived younger than the average Dutch person ( $M = 27.96$  years,  $SD = 7.03$ ),  $F(1, 141) = 20.30$ ,  $p < .001$ ,

Table 2. Amount of correspondence between self- and target-predictions for different orders and targets of prediction

Order of prediction	Target of prediction		
	Average student	Average Dutch person	Average older person
Self–other	.47	.37	.22
Other–self	.74	.94	.35

$\eta^2 = .13$ . And the average Dutch person was perceived younger than the average older person ( $M = 69.72$  years,  $SD = 12.01$ ),  $F(1, 141) = 601.31$ ,  $p < .001$ ,  $\eta^2 = .81$ .

Moreover, the ratings of perceived similarity differed significantly  $F(2, 149) = 5.69$ ,  $p = .004$ ,  $\eta^2 = .07$ . Perceived similarity was highest for the average student ( $M = 4.47$ ,  $SD = 1.17$ ), lowest for the average older person ( $M = 3.64$ ,  $SD = 1.29$ ), with the average Dutch person lying in between these two ( $M = 4.20$ ,  $SD = 1.31$ ). However, the difference between the average Dutch person and the average student was not significant,  $F(1, 149) = 1.21$ ,  $p = .27$ . The difference between the average student and the average older person and the difference between the average Dutch person and the average older person were both significant,  $F(1, 149) = 10.98$ ,  $p = .001$ ,  $\eta^2 = .07$  and  $F(1, 149) = 4.92$ ,  $p = .028$ ,  $\eta^2 = .03$ , respectively. The untransformed correlations are given in Table 2.

Taken together, these results suggest that participants perceived the average student and the average Dutch person as more similar to the self than the average older person. Contrary to our expectations, the average student and average Dutch person did not reliably differ in perceived similarity. As a consequence, we expected similar results for these two conditions for self–other correspondence.

### Main Analyses

Consistent with our expectations, self–other correspondence differed across target condition,  $F(2, 146) = 8.72$ ,  $p < .001$ ,  $\eta^2 = .11$ . The correlations between self-predictions and other-predictions were  $M_r = .61$  ( $SD = 0.45$ ) for the average student,  $M_r = .65$  ( $SD = 0.65$ ) for the average Dutch person, and  $M_r = .29$  ( $SD = 0.38$ ) for the average older person, respectively. Contrast analyses showed that the difference between the correlations in the average student condition and the average Dutch condition person was not significant,  $p = .710$ , but both differed significantly from the correlations in the average older person condition,  $F(1, 99) = 14.61$ ,  $p = .001$  for the average student and  $F(1, 99) = 11.44$ ,  $p = .001$  for the average Dutch person. As expected the effects for the average Dutch person paralleled those for the average student, providing support for the suggestion that the average Dutch person is perceived as similar to the self. Thus, consistent with the findings of Studies 1 and 2, self–other correspondence was higher for targets that were perceived as similar to the self than for targets that were perceived as dissimilar to the self.

Also replicating Studies 1 and 2, self–other correspondence was higher when self-predictions followed other-predictions than when self-predictions preceded other-predictions,  $F(1, 146) = 17.67$ ,  $p < .001$ ,  $\eta^2 = .11$ . The correlations between self-predictions and other-predictions in the other–self condition were higher ( $M_r = .68$ ,  $SD = 0.56$ ) than the correlations in the self–other condition ( $M_r = .35$ ,  $SD = 0.44$ ).

Most importantly, the interaction between order of prediction and target was marginally significant,  $F(2, 146) = 2.78$ ,  $p = .066$ ,  $\eta^2 = .04$ . Replicating Study 2, order of prediction had no effect on self–other correspondence in the average older person condition,  $F(1, 146) = 0.95$ ,  $p = .332$ , but

moderated self–other correspondence in both the average student condition,  $F(1, 146) = 4.24, p = .041$ , and the average Dutch person condition,  $F(1, 146) = 18.174, p < .001$ .

### *Variance of Predictions*

We found a significant main effect of target of prediction,  $F(1, 146) = 3.82, p = .024, \eta^2 = .05$ , indicating that the difference scores differed depending on the target of prediction. Difference scores were biggest for the average Dutch person ( $M = 0.36, SD = 0.07$ ), and smallest for the average older person ( $M = 0.09, SD = 0.07$ ), with the average student lying in between ( $M = 0.24, SD = 0.07$ ). The main effect of order of prediction was marginally significant,  $F(1, 146) = 2.82, p = .095, \eta^2 = .02$ , indicating that difference scores tend to be higher when self-predictions precede other-predictions ( $M = 0.30, SD = 0.06$ ) than when self-predictions follow other-predictions ( $M = 0.16, SD = 0.06$ ). Furthermore the predicted interaction between target of prediction and order of prediction was not significant  $F(2, 146) = 2.01, p = .138, \eta^2 = .03$ .

However, replicating Study 1, simple effects analysis showed that for the average student the difference score was larger in the self–other condition ( $M = 0.41, SD = 0.45$ ) than in the other–self condition ( $M = 0.07, SD = 0.47$ ),  $F(1, 146) = 5.74, p = .018$ . For the average Dutch person the difference score did not differ significantly between the self–other condition ( $M = 0.43, SD = 0.51$ ) and the other–self condition ( $M = 0.29, SD = 0.41$ ),  $F(1, 146) < 1$ , although the differences were in the expected direction. Finally, as predicted, for the average older person the difference score did not differ significantly between the self–other condition ( $M = 0.06, SD = 0.54$ ) and the other–self condition ( $M = 0.12, SD = 0.56$ ),  $F(1, 146) < 1$ .

### *Strategy of Prediction*

Two independent judges, who were blind for the experimental design, coded participants' self-reports on their strategies to predict the other according to whether people mentioned relying on the self. The only instruction raters received was to judge whether or not participants mentioned using themselves to predict the target. An example for a report that relied on the self is 'I just imagined how I would feel in that situation.' An example for a report that did not rely on the self was 'I thought of my grandmother.' The inter-rater reliability was high ( $\alpha = .89$ ). Differences were solved by discussion.

A  $\chi^2$  test confirmed that frequency of reports relying on the self differed significantly across target conditions,  $\chi^2(2, 152) = 15.45, p < .001$ . People who predicted the average student and the average Dutch person mentioned using the self to predict the other in 38 and 39% of the cases respectively, as compared to 10% of the people who predicted the average older person.

## **Discussion**

Self–other correspondence was smaller when people predicted the feelings of a dissimilar target as compared to a similar target. Because the average student and the average Dutch person were perceived as equally similar to the self, results of these two conditions did not differ. Although both targets are in-group members, the category average Dutch person is much broader than the category average student. Therefore one may expect differences in perceived similarity. Why then did participants perceive the average Dutch person as highly similar to themselves? It is possible that as long as the degree of perceived similarity between a target and the self lies within the range of acceptance (Sherif

& Hovland, 1961), the target is perceived as being similar to the self. The average student and the average Dutch person might be assimilated to the self, leading to comparable levels of perceived similarity for those targets (Stapel, Koomen, & van der Pligt, 1997). Support for this suggestion is provided by the fact that participants underestimated the mean age of the imagined average Dutch person ( $M = 27.96$  years) considering national statistics on the mean age of Dutch citizens ( $M = 38.2$  years) (2003). They seemed to assimilate the average Dutch person's age toward their own age ( $M = 20.24$ ). However, the age of the imagined target may not be the best proxy for similarity. Future research should systematically investigate and assess in more detail how participants view an average student and an average Dutch person.

Consistent with our predictions, Study 3 yielded that self–other correspondence was higher when participants first predicted the feelings of the similar other than when they first predicted their own feelings. However, order effects did not appear when participants predicted a dissimilar target. Based on feature-matching theory (Tversky, 1977), we argued that this interaction effect between target similarity and order of prediction appears because similar targets elicit use of the self and in this study we showed that this was indeed the case. In their self-reports on the strategies they used to predict the other, we found greater reliance on the self for the prediction of both the average student and the average Dutch person than for the prediction of the average older person.

Finally, paralleling the previous two studies, self-predictions were more elaborate than other-predictions for similar targets but did not differ for dissimilar targets. More importantly, for a similar target the difference in variation of self-predictions and other-predictions was more pronounced when people first predicted themselves. For a dissimilar target the difference was smaller to begin with and was not influenced by the order of predictions.

## GENERAL DISCUSSION

The results of three studies allow us to draw several conclusions about the use of self in social prediction. Replicating earlier research and confirming our hypothesis, when people predict the feelings of a similar other they make use of the self. Second, the use of the self in social prediction is susceptible to order effects. All three studies showed that self–other correspondence was lower for similar targets when self-predictions preceded other-predictions than when they followed other-predictions. Third, order effects for self–other correspondence did not emerge for the prediction of dissimilar others. When predicting dissimilar others, people reported relying less on the self than when predicting similar others. Although there are arguments against the use of self-reports (Nisbett & Wilson, 1977), they can be a first indicator of the cognitive processes underlying predictions (Dunning & Hayes, 1996). The self-reports in Study 3 converge with other research showing that predictions of a similar other involve the self more than predictions of a dissimilar other (Ames, 2004). Fourth, the obtained pattern of standard deviations for self- and other-predictions nicely conformed to the theoretical predictions of feature-matching theory (Srull & Gaelick, 1983; Tversky, 1977), although not all effects were reliable.

### Explaining Order Effects in Self–Other Correspondence

To explain order effects in social prediction, our studies are the first to combine target effects and order effects in social prediction. We showed that order effects only emerge for social predictions in which people rely on the self, that is for predictions of targets that are perceived as similar to the self. They are



absent for predictions in which people rely on other information and knowledge (Ames, 2004), that is, for predictions of target that are perceived as dissimilar to the self. It thus seems that the order effect is limited to judgments that are based on the self. This finding enhances our understanding of the way in which people use the self used in social judgments. Specifically, we suggested that the underlying process that leads to differential use of the self for different orders of predictions can be explained by the feature-matching theory (Srull & Gaelick, 1983; Tversky, 1977). We found evidence supportive of this reasoning in the variance of self- and other-predictions. While not all findings were reliable, the standard deviations of self- and other-predictions for similar others in Studies 1 and 3, supported a feature-matching account of order effects in social prediction. Compatible with differences in feature accessibility, standard deviations were greater when self-predictions preceded other-predictions for the average student than when self-predictions followed the other-prediction. Because our studies fail to explicitly test the feature-matching explanation, however, these findings have to remain suggestive.

### Theoretical Alternatives

Our studies bear resemblance to other research on order effects, including research on question sequences (e.g., Ottati, Riggle, Wyer, & Schwarz, 1989; Schwarz, Strack, & Mai, 1991) and social comparison. In the following, we will address the similarities and differences between these approaches and ours more systematically.

#### *Research on Question Sequences*

Cognitive processes underlying people's responses to survey questions have received considerable attention (e.g., Ottati et al., 1989; Schwarz et al., 1991; Strack, Martin, & Schwarz, 1988). This research commonly finds assimilation and contrast effects for so-called part-whole question sequences. To illustrate, when people are asked to rate their relationship satisfaction *before* rating their general life satisfaction, the correlation between these two answers is lower than when people are asked to rate their relationship satisfaction *after* rating their general life satisfaction (Strack et al., 1988). When the general question (e.g., life satisfaction) precedes the specific question (e.g., relationship satisfaction), answers are essentially uncorrelated. When the question order is reversed, however, the correlations are substantial. This finding indicates that people are more likely to use the information from the specific question when answering the general question, than *vice versa* (Schwarz et al., 1991; Strack et al., 1988). So, the part is assimilated to the whole, but the whole is contrasted away from the part. To explain this pattern of results, Schwarz et al. (1991) applied conversational rules (Grice, 1975). An implicit rule in communication is that people should not be redundant. When answering sequences of questions in a survey, people may assume that they have to provide new information for each question. They would hence deliberately ignore information they provided in the specific question to provide a new, non-redundant answer to the general question (Strack et al., 1988).

How do these findings apply to the order effect of self-other correspondence for social predictions of similar others? At first glance, one may consider the self as representing a specific case of a group or population while the average other in our studies represents a general case or exemplar. When applying this suggestion to sequential questions and conversational norms, however, it would give rise to results that are opposite to ours. Indeed, in this framework, one would expect greater correspondence when the specific (i.e., the self) precedes the general (i.e., the average other). Yet, we find the exact opposite order effect. As we see it, one way around this seeming impasse would be to again apply the feature-matching account to sequential questions. Because the self is the familiar entity, many features are accessible as



self-knowledge is high. In this sense, one could compare the self to the general question as it encompasses much more information than the average other. This assumption would give rise to the same predictions as the ones we proposed and fit our findings.

Although the part–whole assimilation and contrast may not be entirely suitable to explain our findings, it offers exciting avenues for future research by drawing attention to motivational processes in social prediction. For example, it is possible that when asked to predict themselves before predicting a similar other, participants may be motivated to avoid redundancy (e.g., I've already answered this for me, they must want to know something different, Grice, 1975). Another possibility is that participants may want to protect their identity (e.g., I don't want to be like the average student, cf. research on optimal distinctiveness, Brewer, 1991). Research by Codol et al. (1989) provides evidence that identity affirmation motivation may be at the root of the asymmetries commonly observed in the perception of interpersonal distances. That is, people tend to consider others closer to themselves than they consider themselves to others. More research is needed to pin alternative explanations for order effects in the social prediction of similar others against each other and systematically investigate different motivational forces that may drive variations in self–other correspondence in social prediction.

### *Research on Social Comparison*

Another area of research akin to our studies is research on social comparison (Festinger, 1954). This research is based on the premise that the evaluation of the self is relative and depends on the outcome of a comparison between the self and others (cf. Mussweiler & Strack, 2000). Abundant studies show that people's self-evaluation varies as a function of the social comparison target (e.g., Buunk & Ybema, 1995; Mussweiler, 2001; Stapel & Koomen, 2001; Stapel et al., 1997). Commonly, social comparison information of a target is processed in a way to enhance the self. As a consequence, people tend to assimilate information about others who have positive or desirable traits to the self and tend to contrast information about others who have negative or undesirable traits away from the self (e.g., Stapel & Koomen, 2001).

Social comparison processes, comparable to social prediction, vary as a function of similarity. Similar others provide a meaningful comparison standard (e.g., Festinger, 1954), and similarity of comparison targets is considered to indicate relevance (e.g., Blanton, 2001). So, similar others are useful sources of information about evaluations of the self, while dissimilar others are considered irrelevant because they do not offer useful insights.

Because social comparison involves a comparison between a familiar entity, the self, and less familiar entity, a similar other, it is not surprising, that researchers have examined feature-matching effects in social comparison (e.g., Hodges et al., 2002; Mussweiler, 2001; Srull & Gaelick, 1983). Indeed, Srull and Gaelick's (1983) reasoning for explaining order effects in social comparison in perceived similarity by applying feature-matching theory, inspired our theoretical reasoning for explaining order effects in social prediction. Similar to the sequential questioning, this research in social comparison examines the influence of motivational and non-motivational factors, such as the feature-matching phenomenon, that may drive asymmetric comparisons and lead to biases in social comparative judgments (for review see Chambers & Windschitl, 2004).

Although it is appealing to relate social comparison research and findings to our studies on social prediction, more research is needed to systematically examine the similarities and differences between these two lines of research. Social prediction is neither concerned with self–other comparisons nor with evaluative judgments—at least not explicitly. Moreover, the predictions are made apart from each other, in our studies participants' self- and other-predictions were separated by a filler task that lasted about 5 minutes. However, social comparison research shows that people automatically compare self

and others (e.g., Mussweiler & Bodenhausen, 2002) and social prediction research shows that people automatically use the self when predicting others (Epley et al., 2004). This research provides support for our assumption that during the other-predictions in our studies, the self is activated and is likely to be automatically compared to the other. For feature-matching effects, our results on social prediction of feelings paralleled those for social comparisons on similarity (Mussweiler, 2001; Srull & Gaelick, 1983). Yet, more research is needed to investigate whether other principles of social comparison extent to social prediction research as well. For example, it is possible that the use of the self in social prediction is an implicit process, but making the self explicit interrupts that implicit process from occurring. Additionally, one could investigate whether the similarity of self and other increases as a function of their common features and decreases as a function of their distinctive features (e.g., Hodges et al., 2002) or whether and how self–other correspondence in social prediction varies as a function of desirable and undesirable traits in self and others (Stapel & Koomen, 2001).

### **Strength and Limitations**

This set of studies investigated order effects that appear in social predictions for negative emotional scenarios. We focused on these predictions because social predictions of feelings have not received much attention in research (for an exception see Senecal, Murard, & Hess, 2003). Most research concerning social predictions examines behaviors, attitudes, and thoughts (e.g., Epley et al., 2004; Kenny, Bond, Mohr, & Horn, 1996; Van Boven & Loewenstein, 2003). Furthermore, we expected negative scenarios to lead to strong effects because negatively valenced events have a greater impact on the individual than positively valenced events (for a review see Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). On the other hand, the order effects may have been weakened by using negative scenarios, because negative self-knowledge may be less accessible to people (Wagenaar, 1986). Therefore it is likely that for positive scenarios even more features of the self get activated, which would enhance the feature-matching effect. More research is needed to compare self- and other-predictions for positive and negative events, attitudes, and behaviors.

To further investigate whether people rely on the self and how the self is activated in social predictions future research should include unobtrusive measures of self-activation. Because people do not have access to their cognitive processes, asking them to introspect may not provide reliable answers (Nisbett & Wilson, 1977). Moreover, our studies did not directly establish whether more features of the self were activated at the time of the self-predictions. The greater variation of self-predictions found in our studies is an indication of a more elaborate self-knowledge but a direct measure assessing the degree to which the self is activated after the self- and other-predictions would help to clarify how the self becomes activated during these two predictions.

### **Conclusions**

We started this paper by suggesting that people rely on the self when predicting others. We found that the use of the self in social prediction is a dynamic process that varies as a function of the social context. This social context accentuates differences and similarities between self and others at the time of the social prediction. By combining the effects of two factors that influence the use of the self, the target of the prediction and the order of the prediction, we were able to map out under which circumstances the self is used. We found that only when the two factors are considered in concert we can begin to understand when and how these factors influence the use of the self in social prediction. Specifically, our studies suggest that examining these cognitive underpinnings of social predictions represent a

fruitful path to enhance our knowledge on how people use the self to predict the feelings, thoughts, and motives of others surrounding them.

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